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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY-DOCKET NO.	CONFIRMATION NO.
10/602,529	06/23/2003	Joseph Harold Steinmetz	35022.001C1	8158
34395	7590	12/08/2006	EXAMINER	
OLYMPIC PATENT WORKS PLLC			NGUYEN, TANH Q	
P.O. BOX 4277			ART UNIT	PAPER NUMBER
SEATTLE, WA 98104			2182	

DATE MAILED: 12/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/602,529	STEINMETZ ET AL.	
	Examiner	Art Unit	
	Tanh Q. Nguyen	2182	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 17 November 2006.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) 30-43 is/are withdrawn from consideration.
- 5) Claim(s) 1-8 is/are allowed.
- 6) Claim(s) 9-29 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 15 March 2006 is/are: a) accepted or b) objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application
- 6) Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I, claims 1-29, in the reply filed on November 17, 2006 is acknowledged.
2. The traversal is on the ground that the subject matter to which claims 30-39 are directed is also included in claims 1-29, and there is no possible way that a search conducted for claims 30-43 would not overlap a search conducted for claims 1-19.

This is not found persuasive because Group I, claims 1-8 (the combination) as claimed does not require the particulars of Group II, claims 30-43 (the subcombination) as claimed because the claim 1 includes "following a failure of a disk-drive link or data-storage-device-link port, receiving data and commands transmitted from one or more of the number of data-storage-device-link port components of the other storage-shelf-router integrated circuits", and because the claim 30 has separate utility such as "destination logic that determines whether a message received from one of the first port and the second port is directed to the local storage-shelf-router, to a remote storage shelf router intercommunicating with the local storage router, or to a remote entity external to the storage shelf". In other words, claim 1 does not require the particulars of claim 30 for patentability, and claim 30 does not require the aforementioned limitations of claim 1 for patentability. A search for subject matter in claim 1 would not require the search for subject matter in claim 30, and a search for subject matter in claim 30 would not require the search for subject matter in claim 1.

This is also found not persuasive because Group I (claims 9-29) and Group II

(claims 30-43) are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct if they do not overlap in scope and are not obvious variants, and if it is shown that at least one subcombination is separately usable. In the instant case, Group II has separate utility such as "destination logic that determines whether a message received from one of the first port and the second port is directed to the local storage-shelf-router, to a remote storage shelf router intercommunicating with the local storage router, or to a remote entity external to the storage shelf". Furthermore, Group I (claims 9-29) has separate utility such as "routing logic for routing commands received through the first and second communications-medium ports to the one or more processors and for routing data received through the two or more communications-medium ports to the number of data-storage-device-link-ports components". Claim 9 does not require the particulars of claim 30 for patentability, and claim 30 does not require the aforementioned limitations of claim 9 for patentability. A search for subject matter in claim 9 would not require the search for subject matter in claim 30, and a search for subject matter in claim 30 would not require the search for subject matter in claim 9.

3. The traversal is also on the ground that it would be a far more serious burden to redundantly search two entirely related sets of claims than to conduct a single search for the overlapping subject matter. This is not found persuasive because claims 1, 9 do not have overlapping subject matter with claim 30 9as is indicated above), and it would be a serious burden to search for non-overlapping subject matters.

4. The traversal is also on the ground that the examiner's justification for the

restriction requirement does not make sense because a storage-shelf router without a routing logic would be useless. The traversal is not persuasive because the restriction is not based on whether the storage-shelf router includes a routing logic, but whether the specific routing logic (as recited in claim 30) is required for patentability in claims 1, 9 - as a routing logic different from the one recited in claim 30 can be used as the routing logic recited in claims 1, 9.

The traversal is also not persuasive because it amounts to any reference teaching a storage-shelf router also teaching the routing logic of claim 30. If such traversal represents applicant's position, then applicant needs to establish that any reference with a storage router would teach the routing logic of claim 30, or any routing logic in the claims that depend on claim 30.

5. The traversal is also on the ground that the "subcombination refers to the ability of a path-controller to accept data and commands from either a first storage-shelf-router integrated circuit or a last storage-shelf-router integrated circuit, and without this ability, one of the two recited storage-shelf-router integrated circuits would be unable to communicate with the storage device to which the path controller card interfaces. This would, in turn, make one of the two storage-shelf-router integrated circuits useless. The point of using two or more storage-shelf-router integrated circuits is that, when certain failures occur that prevent one storage-shelf-router integrated circuit from accessing a storage device, the other or others of the storage-shelf-router integrated circuits within a storage shelf can take over control of the storage device. Such fault-tolerance is inherent in the storage shelf, the storage-shelf integrated circuit, the routing logic

component of the storage-shelf integrated circuit, and, at least in part, the path-controller cards".

The traversal is not persuasive because claim 30 does not include any recitation of the ability of a path-controller to accept data and commands from either a first storage-shelf-router integrated circuit or a last storage-shelf-router integrated circuit, and because claim 1 includes "each path controller card receiving data and commands transmitted from one or more of the number of data-storage-device-link port components of the other storage-shelf-router integrated circuits following a failure of a disk-drive link or data-storage-device-link port' which is not necessarily inherent, even though fault-tolerance may be inherent in some storage-shelf systems (i.e. fault-tolerance may not be inherent in other storage-shelf systems, as a router may be used for load balancing, mirroring in other storage-shelf systems). Furthermore, claim 1 does not require the specific routing logic of claim 30 for patentability, and claim 30 does not require the path controller with fault-tolerance feature of claim 1 for patentability.

6. The traversal is also on the ground that the routing logic component within a storage-shelf router is a fundamental component of a storage-shelf-router integrated circuit implementation, and a storage-shelf-router circuit would be inoperable without the routing logic component. The traversal is not persuasive because the restriction is not based on whether the storage-shelf router includes a routing logic, but whether the specific routing logic (as recited in claim 30) is required for patentability in claims 1, 9 - as a routing logic different from the one recited in claim 30 can be used as the routing logic recited in claims 1, 9.

The traversal is also not persuasive because it amounts to any reference teaching a storage-shelf router also teaching the routing logic of claim 30. If such traversal represents applicant's position, then applicant needs to establish that any reference with a storage router would teach the routing logic of claim 30, or any routing logic in the claims that depend on claim 30.

7. The traversal is also on the ground that "the language cited from claim 30 can also be found in claims that depend from claim 1. For example, routing based on a determination of the message is mentioned in claims 16, 18, 20-22, 25-27". The traversal is not persuasive because claims 16, 18, 20-22, 25-27 depend on claim 9 rather than claim 1, because claims 1, 9 do not require the particulars of the routing logic of claim 30 for patentability, and because the limitations recited in claims 16, 18, 20-22, 25-27 are not recited in either claim 1 or claim 9.

8. The requirement is still deemed proper and is therefore made FINAL.

9. Claims 30-43 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Claim Objections

10. Claims 10, 14 is objected to because of the following informalities:
"include" in line 2 of claim 10 should be replaced with --includes--
"command" in line 3 of claim 10 should be replaced with --commands--
"the first entity one of" in line 5 of claim 14 should be replaced with "the first

entity is one of--

"the second entity one of" in line 9 of claim 14 should be replaced with "the second entity is one of--.

Claim Rejections - 35 USC § 112

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

12. Claims 9-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

13. Claim 9 recites the limitation "the two or more communications-medium ports" in line 11.

Claim 10 recites "the communications-medium port" in line 3, and also in line 4.

Claim 10 recites "the communications-medium port" in lines 2-3.

There are insufficient antecedent bases for the above limitations in the claims.

14. Claim 12 recites "the first-in-first-out buffer within the two communications-medium ports" in lines 2-3. Claim 13 recites "the first-in-first-out buffer within the two communications-medium ports" in line 2. The limitations in claim 12 and 13 appear to contradict the limitation "each of the two communications-medium ports includes a first-in-first-out buffer" of claim 10.

Claim Rejections - 35 USC § 102

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. Claim 9 is rejected under 35 U.S.C. 103(b) as being anticipated by Fukuzawa et al. (US 6,098,129).

Fukuzawa teaches a storage-shelf-router integrated circuit [104, FIGs. 1-3] employed within a storage shelf [10, FIG. 1] that contains a number of data-storage devices [105, FIGs. 1-2] interconnected to two communications media [two of 103, 108(117), 108(126) - FIG. 2], the storage-shelf-router integrated circuit including:

- a first communications-medium port [one of 103, 108(126), 108(177) - FIG. 2];
- a second communications-medium port [another one of 103, 108(126), 108(177) - FIG. 2];
- one or more processors [302, FIG. 3];
- a number of data-storage-device-link-port components that transmit data and commands to the number of data-storage devices through disk-drive links [FIG. 6];
- routing logic [314, 315 - FIG. 3] for routing commands received through the first and second communications-medium ports to the one or more processors and for routing data received through the two communications-medium ports to the number of data-storage-device-link-port components [col. 7, line 26-col. 8, line 16].

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

19. Claims 10-12, 14, 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuzawa et al..

20. As per claim 10, Fukuzawa does not teach each of the two communications-medium ports including a FIFO for writing commands and data and for accessing commands and data from the FIFO. Since it was known in the art at the time the invention was made for a communications port to include a FIFO to regulate commands and data to and from the communications port, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a FIFO in each of the communications ports in order to regulate commands and data to and from the

communications ports.

21. As per claim 11, Fukuzawa does not teach accessing an initial portion of a command or data from the FIFO of a communications-medium port while the communications-medium port is writing a later portion of the command or data into the FIFO. Since it was known in the art at the time the invention was made to use dual-port memory to allow for simultaneous access and write, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the FIFO with a dual-port memory in order to allow for simultaneous access from and write to the FIFO.

22. As per claim 12, Fukuzawa teaches the processor [307, FIG. 3] for directing the commands to the appropriate destinations, hence routing commands accessed from the FIFO to the processor to a module that writes the command to a shared memory [303, 305, 306 - FIG. 3] from which the commands can be accessed by the processor.

23. As per claim 14, Fukuzawa teaches the storage-shelf-router being assigned a unique number [DISK CONTROLLER A, FIG. 2] and is linked through the first communications-medium port and a first communications medium to a first remote device external to the storage shelf [DISK DRIVE GROUP B, FIG. 2], and is linked through the second communications-medium port and a second communications medium to a second remote device external to the storage shelf [DISK DRIVE GROUP X, FIG. 2].

24. As per claim 28, Fukuzawa teaches a communications medium being a fibre channel medium [126, FIG. 2] and a SCSI medium [117, FIG. 2] and further fibre

channel based on SCSI being used [col. 6, lines 38-39] - hence the communications media being fibre channel communications media. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for all communications media to be fibre channel communications media in applications that require extended distances since it was known to use fibre channel for extended distances applications [col. 6, lines 34-37].

Fukuzawa does not teach the data storage devices being ATA disk drives. Since it was known in the art to use ATA disk drives as opposed to SCSI disk drives because ATA disk drives are less expensive, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use ATA disk drives in applications where cost is a factor, in order to reduce cost.

25. As per claim 29, Fukuzawa teaches the communications media being fibre channel communications media and ATA disk drives (see rejections of claim 28 above), but does not teach SATA disk drives. Since SATA is a new technology that offers better speed, cable management, hot swap ability, and compatibility with SAS to SATA disk drives, and since it is expected for SATA disk drives to eventually completely replace ATA disk drives, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use SATA disk drives in order to make use of the aforementioned advantages.

Double Patenting

26. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the

unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

27. Claim 9 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 11/010,842. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 1 of the copending application claims all the limitations recited in claim 9 of the current application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Allowable Subject Matter

28. Claims 13, 15-27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims and if the 112 rejections and the objections are overcome.

Conclusion

29. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tanh Q. Nguyen whose telephone number is 571-272-4154. The examiner can normally be reached on M-F 9:30AM-7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Huynh can be reached on 571-272-4147. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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TQN
December 6, 2006



December 6, 2006